AMENDMENTS TO THE SPECIFICATION

Please replace Paragraphs **[0069, 0070, 0072, 0073, 0074, 0076, 0077, 0079,** and **0083]** with the following paragraphs rewritten in amendment format:

[0069] Referring now to Figure 6 in particular, a preferred embodiment of an aircraft air conditioning system 510 in accordance with the present invention may be seen. The system 510 includes a pair of cooling packs 512 and 514, a single mixing manifold 516, and a pair of supplemental cooling packs 518 and 520. Outside air 522 from the engine, APU bleed, electrically or shaft driven compressors or any other compression device (not shown) flows through the cooling packs 512, 514. Once through the cooling packs 512, 514, the outside air 522 is at a temperature below the lowest temperature required by the temperature control demands of the pressurized volume of the aircraft.

[0070] The outside air 522 flows into the mixing manifold 516 where it mixes with recirculation air 528. From the mixing manifold ~~526~~ 516 mixed air, or inside air 526, flows to the cabin, galleys and crew rests. Recirculation air 528 returns via the supplemental cooling pack 518, wherein the recirculation air 528 is re-cooled for further use. Such further use includes return to the cabin, via the mixing manifold 516 for ventilation and temperature control. Additionally, a portion of the recirculation air 528 may be drawn off as recirculation air 532 for temperature control of the galley chillers, electronic equipment, pack bay, and cargo. Note that, by using the recirculation air 532 instead of drawing in additional outside air 522, this gives rise to the aircraft level energy savings and other benefits provided by the present invention.

[0072] Similarly, aircraft air conditioning system 610 accomplishes temperature control functions without drawing in and compressing outside air as shown in Figure 7. The system 610 includes a cooling pack 612 and a supplemental cooling pack 616. Outside air 620 flows through the cooling pack 612 wherein it is mixed with recirculation air 626 and cooled to form inside air 622. The inside air 622 is fed to the cabin, galleys, and crew rests to satisfy ventilation and temperature control needs. Whereupon the air returns as recirculation air 626 to the supplemental cooling pack 616. In the supplemental cooling pack 616 the recirculation air 626 is re-cooled and may be directed back to the cabin for further ventilation and temperature control as shown.

[0073] In the alternative, a portion of the recirculation air 626 may be directed to devices requiring temperature control only. Such temperature control dedicated recirculation air 630 satisfies the temperature control needs of the galley chillers, electronic equipment, pack bay, and cargo. Another alternative allows the use of a centralized coolant loop 636 to satisfy the various temperature control needs. As with the other centralized coolant loops, the centralized coolant ~~lop~~ loop 636 may employ any commercially available coolant suitable for use in the pressurized volume of the aircraft. Thus, as with the other system architectures provided by the present invention, system 610 provides temperature control functions independent of the need to draw in and compress outside air.

[0074] Another preferred embodiment in accordance with the present invention may be seen as system 710 in Figure 8. The system 710 also includes a cooling pack 712 and a supplemental cooling pack 716. Outside air 720 is cooled by

the cooling pack 712 and mixed with recirculation air 726 as shown. The mixed air, or inside air 722, flows to the cabin, galleys, and crew rests to satisfy ventilation and temperature control needs. Additionally, a portion of the recirculation air 730 may be drawn off from the supplemental cooling pack 716 to satisfy only temperature control needs similar to those already discussed. Thus system 710 also provides the energy savings of the present invention by eliminating the need to draw in and compress outside air 720 to satisfy temperature control needs. Of course, the system 710 (as with other embodiments of the present invention) may include a centralized coolant loop 736.

[0076] In system 810, outside air 816 flows into the cooling pack 812 where it is mixed with recirculation air 822. From the cooling pack 812, the mixed, or inside air 818, may[[,]] flow to the cabin, galleys, and crew rests to satisfy ventilation and temperature control needs. From the cabin and other areas, the inside air 818 returns as recirculation air 822. The recirculation air 822 is cooled by the cooling pack 812. After being cooled, the recirculation 822 air may be mixed with outside air 816 and fed to the cabin, as before, or a portion of the recirculation air 826 may be drawn off for temperature control of the galley chillers, electronic equipment, pack bay, and cargo.

[0077] System 810 may also include a centralized coolant loop 830 to provide temperature control of the galley chillers, electronic equipment, pack bay, and cargo and for supplemental cabin cooling and recirculation chilling. Thus, as shown, system 810 separates the temperature control function from the ventilation function. System ~~816~~ 810 also provides the temperature control function independent of the need to draw in and compress outside air 816.

[0079] In ~~the first step,~~ step 303 the system architecture is defined and includes either a supplemental cooling unit or a central coolant loop, or both. The inclusion of one, or more, of these devices in accordance with the present invention allows the temperature control needs of the various objects in the pressurized volume to be satisfied with a lessened need for compressed outside air. Next, in step 305 is to size the inside air supply for the first object which has the most stringent ventilation need and perhaps a temperature control need. Notably, the inside air supply size will be in part determined, indeed reduced, by the presence of the supplemental cooling unit(s) and central coolant loops in the various architectures provided by the present invention.

[0083] Since the criticality of supplemental electronic equipment cooling may be higher than other functions such as cabin temperature control and ventilation, the present invention (as shown in Figures 10 and 11) allows for the functional separation of the equipment and systems related to these two functions. A system 910 includes an air conditioning pack 912, a supplemental cooling pack 914, an air distribution duct 920, a recirculation air duct (or airway) 921, a recirculation air duct 922, and an overboard exhaust duct 924 (and valve) ~~924~~.924a. Note that the positioning of the various pieces of equipment included in system 910 may be altered without departing from the spirit or scope of the present invention. The system 910 provides ventilation of, and separately temperature control of, the pressurized volume of the aircraft. Generally, the pressurized volume includes a cabin 916 and a cargo bay 918.